

**Supplemental Table S1. Strains and plasmids used in this study**

Name	Description	Source or Note
<b>Strains</b>		
DH10b	<i>E. coli</i> K12 F <sup>-</sup> $\lambda^-$ <i>mcrA</i> $\Delta$ ( <i>mrr-hsdRMS-mcrBC</i> ) $\phi$ 80 $\Delta$ <i>lacZ</i> M15 $\Delta$ <i>lacX74</i> <i>recA1</i> <i>araD139</i> $\Delta$ ( <i>araA-leu</i> )7697 <i>galE15 galK16 rpsL endA1 nupG</i>	(1)
BL21 $\lambda$ DE3	<i>E. coli</i> B F <sup>-</sup> <i>ompT</i> <i>gal dcm</i> <sup>-</sup> <i>lon</i> <sup>-</sup> <i>hsdS</i> (rB <sup>-</sup> mB <sup>-</sup> ) $\lambda$ DE3( <i>lacUV5::T7</i> gene 1 <i>imm21</i> <i>int</i> <sup>-</sup> $\Delta$ <i>nin5</i> $\Delta$ <i>EcoRI</i> [21226-26104] <i>Bam</i> HI27972 <sup>-</sup> )	(2)
<b>Plasmids</b>		
pRARE2	Cm <sup>R</sup> Rosetta plasmid encoding rare tRNAs	Novagen
pET28a	Kn <sup>R</sup> <i>ColEI ori</i> encodes <i>E. coli lacI</i> , T7 promoter, and polylinker	Novagen
pAC22	pET28a derivative. expresses <i>M. bovis</i> $\omega$ , $\alpha$ , and $\beta::\beta'$ fusion with C-terminal His <sub>8</sub> tag from T7 promoter.	
pRM629	pET28a derivative; expresses proteins with N-terminal His <sub>10</sub> -ppx-tag from T7 promoter; Kn <sup>R</sup> . (ppx, Precision protease site)	
pAC27	pRM629 with <i>M. bovis</i> $\sigma^A$ with N-terminal His <sub>10</sub> ppx tag	
pVS9	expresses <i>E. coli</i> EcoRIQ111 from T7 pET33 based promoter	I. Artsimovitch
pAC81	pRM629 with <i>M. bovis</i> NusA with N-terminal His <sub>10</sub> ppx tag	
pAC82	pRM629 with <i>M. bovis</i> NusG N-terminal His <sub>10</sub> ppx tag	
pAC83	pRM629 <i>M. bovis</i> NusG $\Delta$ <i>Mboi1</i>	
pAC84	pRM629 <i>M. bovis</i> NusG $\Delta$ <i>Mboi2</i>	
pAC85	pRM629 <i>M. bovis</i> NusG $\Delta$ CTD	
pRLG3748	p770 with -35 consensus promoter followed by <i>rrnB</i> terminators T1 and T2	(3)
pAC47	pRLG3748 with introduced BamHI and NcoI sites before and after <i>rrnBT1</i> terminator respectively	
pAC48	pAC47 with <i>M. tuberculosis</i> <i>tuf</i> terminator	
pAC49	pAC47 with <i>M. tuberculosis</i> Rv1324 terminator	
pAC50	pAC47 with <i>M. smegmatis</i> <i>gyrA</i> terminator	
pAC51	pAC47 with <i>E. coli</i> <i>trpL</i> terminator	
pAC52	pAC47 with <i>M. tuberculosis</i> <i>rpoC</i> terminator	
pAC53	pAC47 with <i>E. coli</i> <i>rpoC</i> terminator	
pAC54	pAC47 with <i>M. tuberculosis</i> Rv3444c terminator	
pAC55	pAC47 with <i>M. bovis</i> <i>fadD23</i> terminator	
pAC56	pAC47 with <i>M. smegmatis</i> <i>gyrA</i> * sequence from Ref. 4.	(4)
pAC58	pAC47 with <i>M. bovis</i> <i>asnB</i> terminator	
pAC59	pAC47 with <i>M. bovis</i> <i>asnB</i> -1 terminator	
pAC60	pAC47 with <i>M. bovis</i> <i>asnB</i> -2 terminator	
pAC61	pAC47 with <i>M. bovis</i> <i>asnB</i> -3 terminator	
pAC62	pAC47 with <i>M. bovis</i> <i>asnB</i> -4 terminator	
pAC63	pAC47 with <i>M. bovis</i> <i>asnB</i> -5 terminator	

pAC64	pRLG374 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC65	pAC51 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC66	pAC48 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC67	pAC49 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC68	pAC54 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC69	pAC52 with one EcoRI before promoter changed to PvuI and other EcoRI introduced between promoter and terminator	
pAC70	pAC48 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC71	pAC49 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC72	pAC52 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC73	pAC50 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC74	pAC56 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC75	pAC58 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC76	pAC59 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC77	pAC60 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC78	pAC61 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC79	pAC62 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC80	pAC63 but C at positions +11,14,16, and 20 changed to G, T, G, and G respectively	
pAC87	pAC70 but with t <sub>synA</sub> terminator	
pAC88	pAC70 but with t <sub>synB</sub> terminator	

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